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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/653,411	08/31/2000	Whonchee Lee	M4065.0361/P361	5349

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 11/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/653,411

Applicant(s)

LEE ET AL.

Examiner

Joseph Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 39-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 39, 43, 48, it is unclear the limitation "having a reduced number of cavities and/or scratches" since there is no disclosure of what a so call reduced number of cavities and/or scratches is comparing to. In what magnitude or dimension the number of cavities and/or scratches is reduced is not clearly defined.

Claims 40-42, 44-47, are also rejected due to their dependency upon the rejected base claims above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 39- 47, 49-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawakubo et al.

Regarding claim 39, as best, the Examiner is able to ascertain the claimed invention, Kawakubo et al discloses on figure 4E a semiconductor device comprising a

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substrate 1 and at least one electron mechanically polished metal layer 13 formed over said substrate 1, said electro mechanically polished metal layer having a reduced number of cavities and /or scratches.

It should be noted that the term "electro-mechanical polished" merely recites product by process and does not structurally distinguish the metal layer from the structure taught by Kawakubo et al.

Regarding claim 40, Kawakubo et al disclose on figure 4E the metal layer 13 comprises at least one metal selected from the group consisting of noble metals, noble metal alloys, refractory metals and refractory metal alloys (col. 8, line 36).

Regarding claim 41, Kawakubo et al disclose on figure 4E the device comprises a capacitor with at least one electro mechanical polished metal layer 13.

Regarding claim 42, Kawakubo et al disclose on figure 4E the electro-mechanical polished metal layer 13 is bottom electrode of said capacitor.

Regarding claim 43, as best, the Examiner is able to ascertain the claimed invention, Kawakubo et al disclose on figure 4E a semiconductor device comprising a bottom electrode 13 formed over a substrate 1; an insulating layer 14 formed over the bottom electrode; and a top electrode 15 formed over the insulating layer 14, wherein at least one electrode surface comprises an electro mechanically polished surface, said electro mechanically polished metal layer having a reduced number of cavities and /or scratches.

Regarding claim 44, Kawakubo et al disclose on figure 4E the capacitor is a MIM capacitor.

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Regarding claim 45, Kawakubo et al disclose on figure 4E at least one electrode 13 comprises a metal selected from the group consisting of noble metals, noble metal alloys, refractory metals and refractory metal alloys (col. 8, line 36).

Regarding claim 46, Kawakubo et al disclose on figure 4E at least one electrode surface is a surface of the bottom electrode 13.

Regarding claim 47, Kawakubo et al disclose on figure 4E the bottom electrode 13 comprises a platinum electrode (col. 8, line 36).

Regarding claim 49, Kawakubo et al discloses on figure 4E a semiconductor device comprising a substrate 1; and at least one electro-mechanically polished noble metal layer 13 formed over said substrate.

Regarding claim 50, Kawakubo et al discloses on figure 4E a semiconductor device comprising a bottom electrode 13 formed over a substrate 1; an insulating layer 14 formed over said bottom electrode; and a top electrode 15 formed over said insulating layer, wherein at least one electrode surface comprises an electro mechanically polished noble metal surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 48 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakubo et al in view of Sandhu et al.

Regarding claims 48 and 51, Kawakubo et al disclose substantially all the structure set forth in the claimed invention except a memory device electrically coupled to a processor. However, Sandhu et al disclose on figure 20 a memory device 1100 electrically coupled to a processor. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawakubo et al by having a memory device electrically coupled to a processor for the purpose of improving the performance of the integrated circuits.

Response to Amendment

Applicant's arguments filed on 9/12/2002 have been fully considered but they are not persuasive.

The new limitation "a reduced number of cavities and/or scratches" in claims 39, 43 and 48 is indefinite in a sense that it is not clear what this reduced number of cavities and/or scratches compares to. Further, the term "electro-mechanically polished" is merely product by process and therefore not given any patentable weight. As such, the polished surface of metal layer of Kawakubo would herein have a reduced number of cavities and/or scratches because any type of surface polishing would inherently reduce a number of cavities and/or scratches on the surface of a metal layer. Therefore, Kawakubo still reads on now amended claims 39, 43 and 48.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN
October 23, 2002

A handwritten signature in black ink, appearing to be 'Eddie Lee', written in a cursive style.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800